

Software Environment Overview

The software environments at the various sites support the activities associated with weather and climate modeling. These activities may include pre-processing of model input data, post-processing of model output data, developing, building and running the model software as well as visual and numerical analysis of the data as may be supported at a particular site. As such, each site must provide a “scientific software stack”. Owing to the nature of scientific research, it is not realistic to develop a complete enumeration of specific software packages as these change over time.

A given task order may articulate specific software requirements. But in general and as appropriate for a particular vendor platform, each site may require multiple versions of

- Linux Operating Systems, support-for-fee as well as purely Open Source: SLES, CentOS, Red Hat, etc
- Command shells: csh, tcsh, bash, zsh, etc
- Editors: Emacs / XEmacs, Vi / Vim, Nano, Nedit, etc
- Software environment control such as Environment Modules (GNU, LMOD)
- Version control: Git, SVN
- Diff & comparison tools: Meld, P4Merge, Kdiff3, etc
- Various OpenMP enabled Fortran / C / C++ compiler suites that will include, but may not be limited to, Intel and GNU
- MPI libraries appropriate to the target computational platform. May be platform proprietary; may be open source such as MPICH (Argonne National Lab), MVAPICH (Ohio State), Intel MPI, etc
- Parallel enabled visual debuggers such as Allinea DDT and/or Rogue Wave Totalview
- Application performance analysis toolsets such as HPCToolkit and/or Tau
- Scripting languages: Python, Perl, Ruby, Octave, R
- Support tools: NetCDF Operators (NCO), NCView, GrADS, Ferret, the GNU Toolchain, Globus, autoconf / automake, etc
- Support libraries: GRIB, NetCDF, HDF5, libxml, Zlib, etc

At need, the Contractor will have to be flexible in terms of accepting and scheduling new software installation requests and support for legacy software environments. The required tools and specific versions may or may not be available in a particular OS distro.

A selected Environment Modules listing from each of Boulder, Fairmont and Princeton is provided in the remainder of the Appendix.

Selected Environment Modules at Boulder and Fairmont

MET	bbcp	cdo
R	bbftp	cnvgrib
anaconda	binutils	cuda
antlr	cairo	dot

esmf	impi	pgi
ferret	intel	pnetcdf
g2clib	itac	rocoto
g2lib	lmod	sbt
gams	matlab	scala
gcc	mexcdf	settarg
gempak	mvapich2	svn
gmt	nag	szip
gptl	ncclamp	tau
grads	nccmp	totalview
grib_api	ncl	uberftp
hdf4	nco	udunits
hdf5	ncview	vtune
hdf5parallel	netcdf	w3lib
hg	netcdf-hdf5parallel	wgrib
hpss	panoply	wgrib2
idl	papi	xxdif
imagemagick	petsc	

Selected Environment Modules at Princeton

ImageMagick	go	ncview
R	grace	netcdf
acoread	grads	octave
boost	gsl	panoplyj
build	hdf5	perl
cdat	icc	pyclimate
cdo	ifort	pyferret
chkjb	java	python
cmake	julia	qt
cylc	libjasper	readline
dar	libpng	rstudio
ferret	libtool	scientificpython
ffmpeg	libz	screen
gcc	matlab	sq
gcp	matplotlib	sqlite3
gdal	moab	tcl_tk
geos	mpich2	tiff
git	nagsmp	torque
glibc	ncarg	totalview
globus	nco	xv
gnuplot	ncurses	